CONFIRMED MINUTES

IHRA SIDE IMPACT WORKING GROUP

2nd MEETING

PHOENIX, ARIZONA

5 NOVEMBER 1998

ATTENDEES

Keith Seyer	Federal Office of Road Safety, Australia (Chair)
Craig Newland	Federal Office of Road Safety, Australia (Secretary)
Angus Draheim	Federal Office of Road Safety, Australia
Dainius Dalmotas	Transport Canada
Richard Lowne	EC/EEVC
Joseph Kanianthra	National Highway Traffic Safety Administration, USA
Matthew Maltese	National Highway Traffic Safety Administration, USA
Rolf Eppinger	National Highway Traffic Safety Administration, USA
Robert Hultman	AAMA
Rainer Justen	ACEA
Takahito Uchimura	JAMA/Japanese Ministry of Transport
Hideki Yonezawa	Japanese Ministry of Transport
Risa Scherer	Chair - WorldSID Task Group

MINUTES OF THE PREVIOUS MEETING

The draft minutes of the first meeting were amended to show that at the first meeting, Mr Koshiro Ono was representing the Japanese Ministry of Transport. The minutes were then accepted.

IHRA BIOMECHANICS WORKING GROUP UPDATE

Mr Eppinger delivered a brief progress review of the activities of the IHRA Biomechanics Working Group. There are several tasks in progress:

- Mr Dalmotas has been tasked to conduct a review of field accident data from the participating members to enable the setting of priorities for side impact injury detection.
- Mr Cesari has been tasked to conduct a review of available injury criteria.
- Mr Eppinger has been tasked to investigate and report on the biofidelity requirements for a side impact dummy, using ISO TR9790 as a starting point.
- Mr Wismans has been tasked to review existing dummies and their responses.

- Mr Seyer has been tasked to conduct a review of anthropometric data to enable an informed decision regarding the desired anthropometry of a side impact dummy.

WORLDSID TASK GROUP UPDATE

Ms Scherer presented an update on the activities of the WorldSID Task Group (refer documents SIWG3 and SIWG4).
Ms Scherer drew attention to the inclusion of information from the IHRA Biomechanics and Side Impact Working Groups in the development of the WorldSID. The WorldSID Task Group expects that the IHRA Biomechanics Working Group will provide injury criteria and the IHRA Side Impact Working Group will provide test procedure(s) to which the WorldSID should be designed. Document SIWG4 is a working document and is subject to change dependent upon IHRA recommendations and directions.
A prototype WorldSID is scheduled for 03 January 2000, with a production dummy scheduled to be available at the time of the ESV 2001 conference (May 2001). To enable achievement of these timings, a project manager has been appointed to conduct the development program.
The WorldSID Task Group requested that a formal communication link be established between the WorldSID Task Group and the IHRA Biomechanics and Side Impact Working Groups.

SHORT TERM AND LONG TERM HARMONISATION WORK PLANS

Mr Kanianthra asked why the estimated date for introduction of the WorldSID into regulation had been set at 2010-2015, particularly since the scheduled date for a production dummy was 2001. Mr Hultman noted that these estimates had been based on the timings of previous regulatory changes, for example, the Hybrid II and III dummies. The 2010-2015 time frame is when a global side impact regulation would be in effect.

Mr Eppinger expressed concern about the effects of delays or changes to the IHRA working group recommendations on the development of WorldSID.

The Chairman suggested that in order to develop a work program for the working group, some decisions needed to be made on the focus in both the short and long terms. These items would need some definition, and the chairman sought the views of the delegates.

AAMA

Mr Hultman informed the working group of the petition presented to the NHTSA requesting short-term harmonisation of side impact regulations. The petition proposed to address the previously identified deficiencies with the EuroSID-1 dummy (primarily rib flat-topping and shoulder binding) and permit the use of a modified EuroSID-1 dummy in an ECE R95 test to demonstrate vehicle

compliance. The proposal allowed for the fitting of a modified EuroSID-1 in both the front and rear seating positions.

NHTSA

Mr Kanianthra stated that a modified EuroSID-1 dummy may be useable in the short term as a replacement for the DOT SID in FMVSS 214. This is in contrast to the AAMA position, which proposed a modified EuroSID-1 in an ECE R95 test.
Mr Kanianthra noted that NHTSA would need to assess the biofidelity and injury criteria for the modified EuroSID-1 against biomechanical data. The benefits of a change to regulation would also require evaluation. The NHTSA also expressed a desire to have some method to measure risk of injuries from deploying side impact airbags.

Mr Hultman suggested that the SIDIIs could be used for the assessment of side impact airbag risk of injury to out of position occupants.

Mr Kanianthra expressed a further desire to keep a subsystem test for side airbag out of position assessment as part of a harmonised regulation.
Mr Kanianthra reiterated that if a modified EuroSID-1 could satisfy the needs of the biomechanical data it would be an acceptable anthropomorphic test device for NHTSA and could be adopted in FMVSS 214.

Mr Hultman pointed out that the AAMA had noted a deficiency with the EuroSID-1 in FMVSS 214 tests, showing unrealistically high pubic symphysis forces. Mr Hultman expressed a desire to evaluate this issue with a modified EuroSID-1, when the modified version becomes available.

TRANSPORT CANADA

Mr Dalmotas was comfortable with the proposal of short-term harmonisation with a modified EuroSID-1 and long-term harmonisation using the WorldSID. Transport Canada would be willing to accept ECE R95 or FMVSS 214 with modified EuroSID-1 in either of these tests.
Mr Dalmotas expressed concern about the risk of injury to out-of-position occupants from side impact airbags.
Mr Dalmotas reiterated the Canadian view that child safety in the rear seats must not be compromised.

EEVC

Mr Lowne stated that the EEVC was currently undertaking to address only the EuroSID-1 deficiencies that had been observed in Europe, with the added inclusion of shoulder binding. Since the rib flat-topping had not been observed in Europe, it was not within this scope.
However, Mr Lowne also stated that if a modified EuroSID-1 could be used as an interim (short-term) dummy in global regulation, then the EEVC would extend its work program to include resolution of the flat-topping issue.

Mr Lowne pointed out that the modified ribs tested on the EuroSID-1 by Transport Canada and the NHTSA had been shown to reduce flat-topping, however, these ribs have not yet been tested for biofidelity.

Mr Kanianthra asked if the EEVC would accept the modified ribs previously tested by Transport Canada and the NHTSA.

Mr Lowne replied that the EEVC would accept the modified rib design if it resolved the problem, provided the biomechanical response of the EuroSID-1 did not change.

ACEA

Mr Justen delivered a summary of the ACEA position (refer Document SIWG5).

ACEA intends to support a modified rib assembly for the EuroSID-1 to eliminate rib flat-topping. Pending success of this activity, ACEA will propose the modified EuroSID-1 as an alternative dummy in FMVSS 214 as a short-term harmonisation proposal. The expected time frame for implementation of a modified EuroSID-1 in ECE R95 and FMVSS 214 would be 1-2 years.

ACEA supports long term harmonisation with the WorldSID. In view of this, ACEA will have no further activities in the SID 2000 project, but will evaluate SIDIIs as part of the strategy toward long term harmonisation. ACEA expect the final (long-term) harmonised test procedure to be similar to ECE R95 and the ISO 90° side impact standard.

JMoT

Mr Uchimura said that Japan had recently regulated a side impact standard based on ECE R95. If the United States will use a modified EuroSID-1, Japan will support a modified EuroSID-1 in ECE R95, however, if the US will not use a modified EuroSID-1, Japan would like the WorldSID as soon as possible.
The Japanese Ministry of Transport would wish to evaluate the modified EuroSID-1 before acceptance.
Japan supports the AAMA petition of functional equivalence, allowing compliance with FMVSS 214 by using a modified EuroSID-1 and ECE R95 test procedure.
The Japanese Ministry of Transport has not discussed the possibility of an FMVSS 214 test with a modified EuroSID-1, but Mr Uchimura doubted that the JMoT would accept this proposal.

Mr Uchimura asked for a clarification on the definition of harmonisation because the current Japanese belief and desire was for identical, detailed test specifications worldwide.

Mr Kanianthra responded that such a concept may not be viable due to issues such as differences in vehicle fleets and permissible injury risk values in different countries. Mr Kanianthra further pointed out that this issue is not within the scope of the working group and should be resolved in another forum.

JAMA

Mr Uchimura informed the group that JAMA had not yet fixed its budget and was waiting for IHRA decisions before allocating short-term funding to SIDIIs, modified EuroSID-1 or WorldSID.

The Chairman stated that it was important for the working group to have a clear target for both the short and long term to enable development of a work program. This would require a decision by the steering committee as to whether a modified EuroSID-1 could be used as an interim dummy, and under which current regulations. Currently Transport Canada, Europe, the USA and Japan all have independent programs addressing short term solutions.

Mr Eppinger expressed doubts regarding the continuation of the WorldSID program if a modified EuroSID-1 dummy was developed to meet current biomechanical requirements, as this would then make WorldSID redundant.

Mr Lowne contradicted this statement by pointing out that as EuroSID-1 was designed on the basis of biomechanical information of the 1980s, he would not expect it necessarily to replicate more recent results. He would, however, expect WorldSID to be designed to meet the latest data. The modified EuroSID-1 would only address currently identified mechanical issues, with no changes in biofidelity.

DISCUSSION PAPERS

The Chairman then called for presentation of discussion papers from the delegates.

TRANSPORT CANADA

Mr Dalmotas presented some statistics demonstrating the significance of age, restraint and vehicle type on the side impact fatalities in Canada.
He then presented a brief overview and some examples of results from a collision reconstruction program based on a directed field study of vehicle to vehicle side impacts. This work program also served as an evaluation of the SIDIIs dummy, which was found to accurately predict high-speed, low-severity and low-speed, high-severity real world crash results.

ACEA

Mr Justen explained that he was unable to provide ACEA data on accident research as this is proprietary information, held in confidence.
Mr Justen presented an analysis of German data from two in-depth reports and from Daimler-Benz accident research studies (refer Document SIWG6).
This information showed the incidence and severity of side impact crashes in which at least one occupant was injured. Side impacts crashes represented 21% of crashes in which MAIS 1+ injuries were observed and 44% of crashes with

fatalities. Approximately 95% of side impact crashes in which a near side occupant was injured occurred at a delta-v of less than 50 km/h.
The conclusions from this work were:

1. Real world side impacts have a wide range of collision configurations.
2. There is no representative crash test.
3. ECE R95 and FMVSS 214 each represent approximately 10% of the frequency of collision types of car to car crashes.
4. Severity of injury is influenced by impact zone.
5. Severe and fatal injuries occur mainly from impacts only into the passenger compartment.
6. The ECE R95 test procedure best simulates the severe and fatal injuries resulting from passenger compartment impact.

JMoT

Mr Yonezawa presented some information that had been previously published at the ESV conference in Melbourne. This data showed that in Japan, side impacts represented 23.5% of all fatalities, of which 63% were multiple vehicle side impact crashes and 37% were single vehicle side impact crashes. Once again, the head and thorax were identified as the most injured body regions.

NHTSA

Mr Kanianthra informed the group that he did not have data available at this time. Mr Kanianthra undertook to provide information regarding the frontal stiffness and mass distribution of the US fleet at the next meeting.

JMoT/JARI/JAMA

Mr Uchimura presented some information entitled Lateral Collision Against a Pole, which had been previously presented to the International Standards Organisation TC22/SC10/WG1 (refer Document SIWG7). This information demonstrated that Japan had a high number of single vehicle crashes and that impacts to poles and signs represented 18% of all Japanese single vehicle fatal crashes. Most injuries were found to be to the head and neck.

AUSTRALIA

Mr Newland presented Australian data on side impact crashes from the point of view of fatalities (Document SIWG8) and crashes in which at least one person was hospitalised (Document SIWG9). This information showed that side impact crashes account for 28% of all fatal crashes involving cars, four wheel drives, light trucks and vans. Almost half of these fatal side impact crashes (43%) are impacts to narrow objects. The most injured body regions are the head and chest.
The hospitalised occupant database showed that side impact crashes injuring near-side occupants represent approximately 75% of all occupants injured in side impact crashes. In contrast, the HARM estimates for AIS3+ were higher for far side impacts than near side impacts. The major HARM costs were to the head and thorax.

EEVC

Mr Lowne delivered a brief overview of the new testing procedures currently under evaluation for certification of EEVC side impact mobile deformable barrier faces. Mr Lowne described the 5 proposed procedures and indicated that the evaluation program intended to cover all manufacturers of barrier faces.

AAMA

Mr Hultman briefly mentioned the side impact barrier face evaluations that had been conducted by Ford. These tests were in accordance with the certification requirements for ECE R95 barrier faces and prescribe requirements for force-deflection corridors and permissible differences between various segments of the barrier. Tests were conducted using barrier faces from most manufacturers including UTAC, Yokohama, Cellbond, Showa, Plascore as well as the AFL face manufactured by a chemical dip process (Progress Face). The graphical results of these tests were provided to the working group (Documents SIWG10).
The AFL chemical dip face was the only barrier face found to meet all certification requirements.

DEVELOPMENT OF A WORK PROGRAM

The Chairman then called for a brief presentation and discussion of a proposed test matrix as a starting point for a work program for the group. It was agreed at the previous meeting that Mr Lowne would generate this document (refer Document SIWG11).

Mr Lowne presented a proposed rationale for selection of vehicles and a suggested test matrix. Mr Lowne explained that this test matrix attempted to understand how design changes are being driven by regulations. Mr Lowne expressed a desire to learn as much as possible about the outcomes from past regulatory actions to maximise progress and so that the same mistakes were not made twice.

Mr Eppinger asked for clarification regarding the questions to be addressed by the test matrix and expressed doubts about the suitability of the test matrix to provide details about the relationship between design changes and regulations.
A lengthy discussion followed, after which the Chairman summarised the main points:
The group should work towards a test matrix that addresses the questions raised in the discussion paper from the first meeting.
It is important that the group learn from past regulatory experience, particularly with regard to design changes designed to circumvent regulation, rather than improve safety.

It was agreed that the delegates would summarise their experience of design changes resulting from regulatory changes and specifically address the items from

the discussion paper from the first meeting. It was also agreed that the delegates would develop their own test matrix proposals. These items should all be forwarded to the Secretary for compilation before 21 December 1998 and would be discussed at the next meeting.

REPORT TO IHRA STEERING COMMITTEE

It was agreed that due to timing constraints, the Chairman would generate a report to the IHRA Steering Committee and forward it immediately, as there would be insufficient time for the delegates to comment.

NEXT MEETING OF IHRA SIDE IMPACT WORKING GROUP

It was agreed to hold the next meeting of the working group in conjunction with the WorldSID Task Group meeting, scheduled for February 1999. The date and venue for the WorldSID meeting have yet to be finalised, but it is anticipated to be in Europe. It was agreed that the Side Impact Working Group should meet after the WorldSID Task Group at a location chosen by the WorldSID Task Group.

It was also agreed that there should be a meeting scheduled in conjunction with the ISO meetings to be held in Kyoto, Japan in May 1999 and that the Side Impact Working Group should meet on 10 or 11 May 1999. Mr Yonezawa agreed to organise a venue for this meeting.

MEETING CLOSED.

CRAIG NEWLAND
14 January 1999